IN THE CLAIMS

Please amend the claims as follows:

1. (Original) A method for producing Solar Grade Silicon by thermal decomposition of a silicon precursor in the presence of an excess of hydrogen by separately introducing hydrogen gas and the silicon precursor in a vertically oriented reaction chamber in which the lower portion holds a pool of molten silicon, the surface of which the reactants are directed toward and react during the formation of essentially elementary silicon and hydrogen chloride, off gases and by—products formed are withdrawn from the upper portion of the column; silicon formed is withdrawn from the lower portion of the reactor, characterized in that the fluid silicon precursor in introduced at ambient temperatures through a pipe arranged coaxially in a feed pipe for hydrogen gas, where the hydrogen gas functions as a cooling medium for the introduced silicon precursor, in that a steep temperature gradient is held within the reactor, and that the reactants are conducted at great speed toward the surface of the molten silicon by rapid expansion of the silicon precursor and hydrogen gas, and brought to react in the lower warm portion of the reactor, in that any formed silicon chloride reacts with the excess hydrogen in the upper portion of the reactor and falls as particulate solid silicon.

2. (Currently amended) The method according to Claim 1 ~~characterized in that~~ wherein the silicon precursor is trichlorosilane, silane, tetrachlorosilane, or other halogenated silanes, preferably trichlorosilane.

3. (Currently amended) The method according to Claim 1 ~~or 2~~, ~~characterized in that~~ wherein the lower portion of the reactor is held at a temperature above the melting point of silicon, 1410 °C, and the cold upper portion is held at a temperature under 400 °C.

4. (Currently amended) The method according to Claim 1, ~~2 or 3 characterized in that~~ wherein the level of molten silicon in the reactor is held constant by a constant level system for continuous removal.

5. (Currently amended) A reactor for the practice of the method according to ~~the preceding Claims~~ Claim 1 comprising an elongated container [[(1)]]with an inert lining, where the container is equipped with an injection system [[(2)]] for a silicon precursor, preferably trichlorosilane, and hydrogen, and an outlet [[(5)]] for unconverted hydrogen HCl and any by-products, ~~characterized by~~ comprising a constant level outlet system [[(6)]] for produced, liquid silicon, that the feed system [[(2)]] comprises an outer pipe [[(4)]] for introducing hydrogen gas and a pipe [[(3)]] arranged coaxially with pipe [[(4)]] for the introduction of fluid silicon precursor, and where the height of the reactor is sufficient to establish the necessary steep temperature gradient.

6. (Currently amended) Reactor according to Claim 5, ~~characterized in that~~ wherein the temperature in the lower portion of the reactor is held at a temperature above the melting point of silicon, 1410°C, and the cold upper portion is held at a temperature under 400°C.

7. (Currently amended) ~~Use of the~~ The method according to of claim 1 ~~Claims 1 - 4 and the reactor according to Claims 5 – 6~~ for the production of Solar Grade Silicon in an integrated, essentially closed process [[by]] comprising reacting low grade silicon with hydrogen chloride gas during the formation of trichlorosilane which is introduced into a reactor wherein said reactor comprises an elongated container with an inert lining, where the container is equipped with an injection system for a silicon precursor, preferably trichlorosilane, and hydrogen, and an outlet for unconverted hydrogen HCl and any by-products, characterized b y a constant level outlet system for produced, liquid silicon, that the feed system comprises an outer pipe for introducing hydrogen gas and a pipe arranged coaxially with pipe for the introduction of fluid silicon precursor, and where the height of the reactor is sufficient to establish the necessary steep temperature gradient ~~according to Claim 5~~, after which unconverted hydrogen and hydrogen chloride are separated and hydrogen chloride gas is used for the conversion of additional low grade silicon and the hydrogen gas is introduced as a reactant in the process.

8. (Currently amended) A method for the removal of particles from off gas by placing a particle recapture tower on the off gas outlet from a reactor or kiln, ~~characterized in that~~ wherein both the particle recapture tower and the reactor (kiln) are held at a temperature above the melting point of the particles, and which leads to the capture and melting of the particles, and their flowing back to the molten material.

9. (Currently amended) The method according to Claim 8, ~~characterized in that~~ wherein the particle recapture tower has a channel with alternating partitions which result in an undulating flow pattern for the particle carrying gas phase.

10. (Currently amended) The method according to Claim 8, ~~characterized in that~~ wherein the particles, due to the undulating flow pattern, are captured in the molten phase on the channel walls and partitions.

11. (Currently amended) The method according to Claim 8, ~~characterized in that~~ wherein the molten phase, due to the sloping upper side of the partitions, flow vertically downward.

12. (Currently amended) A particle recapture tower for the practice of the method according to ~~Claims 8 to 12~~ Claim 8, ~~characterized in that~~ wherein it comprises a channel [[(10)]] with partitions [[(11)]] with downward sloping geometry [[(12)]], designed so that an opening [[(13)]] is formed between the partition [[(11)]] and the channel wall [[(10)]], where the partitions [[(11)]] alternate from side to side.

13. (Currently amended) The particle recapture tower according to Claim 12, ~~characterized in that~~ wherein the cross section of the channel is preferably square.

14. (Currently amended) The particle recapture tower according to Claim 12 ~~13 or 14~~, ~~characterized in that~~ wherein the channel walls and the partitions are held at a temperature

above the melting point of the particles to be captured.

15. (Currently amended) The particle recapture tower according to Claim 12 ~~13, 14 or 15, characterized in that~~ wherein the particle recapture tower is situated in a secondary reaction chamber in which a steep temperature gradient is held between the upper portion of the reaction chamber and the particle recapture tower.

16. (Currently amended) ~~Use of the~~ The particle recapture tower according to Claim 12 ~~Claims 13 to 16 in the practice of the method according to Claims 1 to 4~~ for the production of Solar Grade Silicon by thermal decomposition of a silicon precursor in the presence of an excess of hydrogen by separately introducing hydrogen gas and the silicon precursor in a vertically oriented reaction chamber in which the lower portion holds a pool of molten silicon, the surface of which the reactants are directed toward and react during the formation of essentially elementary silicon and hydrogen chloride, off gases and by—products formed are withdrawn from the upper portion of the column; silicon formed is withdrawn from the lower portion of the reactor, characterized in that the fluid silicon precursor in introduced at ambient temperatures through a pipe arranged coaxially in a feed pipe for hydrogen gas, where the hydrogen gas functions as a cooling medium for the introduced silicon precursor, in that a steep temperature gradient is held within the reactor, and that the reactants are conducted at great speed toward the surface of the molten silicon by rapid expansion of the silicon precursor and hydrogen gas, and brought to react in the lower warm portion of the reactor, in that any formed silicon chloride reacts with the excess hydrogen in the upper portion of the reactor and falls as particulate solid silicon on the off gases from the primary decomposition chamber.